

REMARKS/ARGUMENTS

Claims 1-69 are pending in the application. Favorable reconsideration is respectfully requested in light of the following Remarks.

1. The Office action broadly rejects Claims 1-69 under 35 U.S.C. 103(a) over Stanek (U.S. Patent No. 6,571,549, hereinafter “Stanek”) in view of Lee et al. (NPL titled “Preliminary Study of Oscillating Triangular Jets”, hereinafter “Lee”). The rejection is respectfully traversed.

To establish a *prima facie* case of obviousness, three criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. *In re Linter*, 458 F.2d 1013, 173 USPQ 560, 562 (CCPA 1972). Second, there must be a reasonable expectation of success. *In re Merck & Co., Inc.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Finally, the applied reference must teach or suggest all the claim limitations. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). *See MPEP §2143*.

It is respectfully submitted that the Office action fails to establish a *prima facie* case of obviousness because at least one of the three criteria have *not* been met. Specifically, there is *no* motivation to combine the cited references because Stanek teaches away from the desirability of the modification suggested by the Office action.

A reference may be said to teach away when “a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant.” *In re Gurley*, 27 F.3d 551, 553, 31 USPQ 2d 1130, 1131 (Fed. Cir. 1994).

The Office action asserts that Stanek teaches at least one oscillating jet. *See Paragraph 1*. Applicant respectfully disagrees. Rather, Stanek is directed to a jet noise suppressor that includes a first and second high frequency pulse injection units 12, 14 located exteriorly of the turbine engine exhaust nozzle. *See Fig. 1; col. 4, lines 28-34*.

The pulse injection units 12, 14 of Stanek are not identical or equivalent to the oscillating jets of the claimed invention because the pulse injection units 12, 14 operate

on a completely different mixing mechanism principle as an oscillating jet in the claimed invention.

As described in Stanek, the pulse injection units 12, 14 include a resonance tube 16 in outlet fluid communication with an injector nozzle 18. The operative combination of the resonance tube 16 and the injector nozzle 18 provides the desired high frequency pulsating discharge of high pressure gas. *See col. 4, lines 48-54*. The pulsating output of the resonance tube 16 perturbs the flow of gas within and immediately after exiting the injector nozzle 18, effectively breaking it up into discrete slugs or pulses that enter the exhaust plume, E. *See col. 5, lines 51-58*.

The pulsed jet of Stanek provides a jet flow fixed in space, but with a strength that varies in time. On the other hand, the oscillating jet of the claimed invention varies in space. In other words, there will be no pulsation if an observer were to follow, say the centerline of the jet of the claimed invention at any instant of time as it physically follows a spiral loci in space. The Stanek jet would see such a pulsation, and the mixing enhancement is a result of its time-variation; whereas, the oscillating jets of the claimed invention produce mixing enhancement via a “stirring motion” provided by a spatially changing jet. Thus, the pulse jets of Stanek can in no way be identical or equivalent to an oscillating jet of the claimed invention.

Stanek also teaches that the combination of the high frequency pulses emitted from the injection units 12, 14 and the alternating low frequency, high amplitude mode of injection created by alternating the operation of the injection units 12, 14 across the exhaust nozzle 110 provides a dramatic reduction of noise. *See col. 5, lines 61-66; col. 6, lines 4-8*. Thus, Stanek teaches away from modifying a pulse jet with an oscillating jet because a person of ordinary skill, upon reading Stanek, would be led in a direction divergent from the path that was taken by the Applicant.

Even though Lee teaches an oscillating jet similar to the claimed invention, one skilled in the art would not be motivated to modify the pulse jets of Stanek with the oscillating jets of Lee because Stanek teaches away from the use of oscillating jets to suppress jet engine noise.

For at least this reason, the Office action fails to establish a *prima facie* case of obviousness. Withdrawal of the rejection is respectfully requested.

2. It is noted that the Examiner has taken Official Notice with respect to Claims 23, 26, 56, 59 and 62-69. Applicant respectfully disagrees.

With respect to Claims 23, 26, 56 and 59, the Examiner takes Official Notice that it is well-known in the art of jet propulsion to control the speed and temperature of the secondary flow in order to avoid the generation of Mach waves. However, Claims 23, 26, 56 and 59 are directed to raising the energy of the oscillating jet, not the jet engine. Thus, the use of Official Notice by the Examiner is misplaced.

With respect to Claims 62-69, the Examiner takes Official Notice that it is well-known in the art of jet propulsion to insert combustible into the primary flow in order to create an after-burning effect that would increase the thrust of the jet engine. However, Claims 62-69 are directed to the use of a liquid to increase the power of the oscillating jet, not the jet engine. Thus, the use of Official Notice by the Examiner is misplaced.

However, in the event the Examiner maintains the use of Official Notice in response to this Request for Reconsideration, Applicant seasonably challenges the use of Official Notice and respectfully requests that the Examiner provide a written Affidavit to support such an Official Notice.

Conclusion

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance. Favorable consideration and prompt allowance of the application is earnestly solicited.

Should the Examiner believe anything further would be desirable in order to place the application in better condition for allowance, the Examiner is invited to contact the undersigned attorney at the telephone number listed below.

It is believed that any additional fees due with respect to this paper have already been identified. However, if any additional fees are required in connection with the filing

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of this paper, permission is given to charge account number 07-0868 in the name of
General Electric Company.

Respectfully submitted,

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